

COVER STORY

## A Run on the Banks

### How "Factory Fishing" Decimated Newfoundland Cod

[Normal View](#) [Print View](#) [Without Graphics](#) [Mail to a Friend](#)

Five hundred years ago, the explorer John Cabot returned from the waters around what is now Newfoundland and reported that codfish ran so thick you could catch them by hanging wicker baskets over a ship's side.

Cabot had discovered a resource that would change England forever, the basis of a maritime trade that would give that tiny island kingdom the wealth, skills and shipbuilding capacity which would transform it into a global empire. He had discovered the most fantastic fishing grounds the world had ever seen, waters so teeming with life that a vast swath of the New World was colonized just to harvest its seemingly limitless bounty.



*A Russian factory trawler docks in St. John's Bay.*

© 1987 Tim Thompson

A century after Cabot, English fishing skippers still reported cod shoals "so thick by the shore that we hardly have been able to row a boat through them." There were six- and seven-foot-long codfish weighing as much as 200 pounds. There were great banks of oysters as large as shoes. At low tide, children were sent to the shore to collect 10-, 15-, even 20-pound lobsters with hand rakes for use as bait or pig feed. Eight- to 12-foot sturgeon choked New England rivers, and salmon packed streams from the Hudson River to Hudson's Bay. Herring, squid and capelin (a small open-water fish seven inches long) spawning runs were so gigantic they astonished observers for more than four centuries. Today, Newfoundland's fish are gone and the seas, streams and rivers lie quiet and empty.

#### An Isolated Treasure House

Of Canada's 10 provinces, the combined territory of Newfoundland and Labrador is the least accessible. Most of its half million people live on the great, barren island of Newfoundland—a landmass of 39,500 square miles, about the size of Virginia, consisting of rocky shores, barren heaths and rolling hills of stunted pine. In winter the island is buffeted by arctic winds, and in early summer the north coast is battered by icebergs floating down from Greenland. (Labrador, the province's mainland component, is three times the size of the island but has only a few thousand residents; this stretch of exposed rock and tundra is simply too far north, too cold, barren and remote to support a large population.) Even in summer, a trip from Boston to St. John's, the capital city, entails 16 hours of driving and 14 hours on the ferry.

Like so much of Newfoundland, the Burin peninsula was founded on fishing. There's evidence that Basque fishermen used the peninsula as a summer fishing base during the early 1500s. French fishermen may have been living there as early as the 1640s, though most up and left in the early 18th century when the area was ceded to England. During the heyday of the Grand Banks schooner fishery, Burin towns were thriving and enormous Victorian mansions were erected in the town of Grand Bank.

In the mechanized, industrial-scale, deep-sea trawler era, the



peninsula was at the heart of the fish-processing business, with year-round seafood plants in Fortune, Marystown, St. Lawrence, Grand Bank and Burin proper, and seasonal ones in three smaller hamlets. Most of the 29,000 people on the peninsula either fished or worked in the plants, for companies that supplied the plants, or for the shipyard that built the offshore trawlers that fed the hungry assembly lines with massive quantities of ocean fish. The Burin plant provided a great many of the fish patties used in McDonald's 'fillet-o-fish' sandwiches. It still does, but the fish it uses is imported from Europe.

The collapse of the cod fishery had devastating ripple effects through the economy of Eastern Canada. Thousands of fish processors lost their jobs along with the fishermen.

© Barrett & Mackay Photo

That's because the impossible has happened. The last great schools of northern cod were scooped up in colossal trawler nets and the government has closed the world's greatest fishery for lack of fish--a ridiculous example of closing the barn door after the horse has escaped. In 1996, the Burin Peninsula recorded the highest unemployment rate in Canada for several months in a row. An estimated 30 percent of the workforce was jobless. "Fishin's all there was," said an area fisherman. "Everybody got too greedy for them fish, 'en then there wasn't anything a'tall."

## The Pursuit of Cod

Until 1949, Newfoundland was a British colony and to this day it feels like a far-flung outpost of Northern Europe. For much of its history Newfoundland was linked to England and Ireland through family ties, commerce, political life and trade. With the development of freezer technology on the eve of World War II, the United States became a major market for Newfoundland cod, but there was little contact--commercial or otherwise--with Canada. It's no accident that St. John's is located on the island's easternmost extreme, nestled between mountains on a harbor opening toward Britain, somewhere out beyond the perpetual wall of fog. From St. John's, London is closer than Calgary, and Ireland nearer than Winnipeg.

The settlement of Newfoundland, indeed of much of North America, was a byproduct of the pursuit of cod. Properly dried and salted codfish would keep for long periods, an important consideration before refrigeration. It was relatively light and easy to transport. From the advent of the New World fisheries in the early 14th century, there was an insatiable, ready market for saltcod in Europe. It was a far cheaper protein source than beef, pork, or lamb, and the only acceptable source of animal protein for Catholics 166 days of every year. Profitable, transportable and easily marketable, cod would rival South American gold and Caribbean sugar in the New World resource-extraction free-for-all.

The story of the cod's destruction, however, begins where Newfoundland's colonial era ends. For the first four centuries after Cabot, Newfoundlanders had little trouble actually finding and catching cod. There were seemingly endless numbers of them. These large, hardy, generic-looking fish are built to last: Adaptable, omnivorous and incredibly fecund (a large female will produce nine million eggs in a single spawning). Atlantic cod survived in their current form for ten million years, through ice ages and warming spells that changed world sea-levels by some 300 feet. They live 20 years or more, ensuring a diverse breeding stock. Particularly cold spawning seasons would select cold-resistant eggs, warm seasons would bring the opposite, and with so many generations present at any one time, the cod has been able to adapt to almost everything. Everything, that is, except industrialized fishing.

## A Dream Species

Cod are part of a family known as "groundfish," so called because they generally live on or near the ocean bottom along the continental shelf. The Northwest Atlantic's other groundfish include haddock, halibut, pollock, flounder and plaice. All these species have been intensively fished and many have shared the sad fate of their cousin, the cod. But the Atlantic cod was by far the most numerous, valuable and important.

Atlantic cod not only school, they live in distinct breeding stocks or populations. Each moves as a vast herd from spawning to feeding grounds and rarely associates with other camps. The "northern" cod dwell off the icy coasts of Labrador and northeastern Newfoundland. Another population spawns on the nutrient-rich Grand Banks, a vast series of underwater hills sunk in shallow water off the Newfoundland coast. There are distinct stocks in the Gulf of St. Lawrence, which separates the island from Quebec and Labrador, and on the smaller St. Pierre Banks near Burin; another masses along Nova Scotia's Atlantic coast, and still more on Georges Bank off New England. These latter stocks live in somewhat warmer water and are markedly larger and faster growing than their compatriots in ice-choked Labrador. Other Atlantic Cod stocks populate the European and Icelandic coasts.

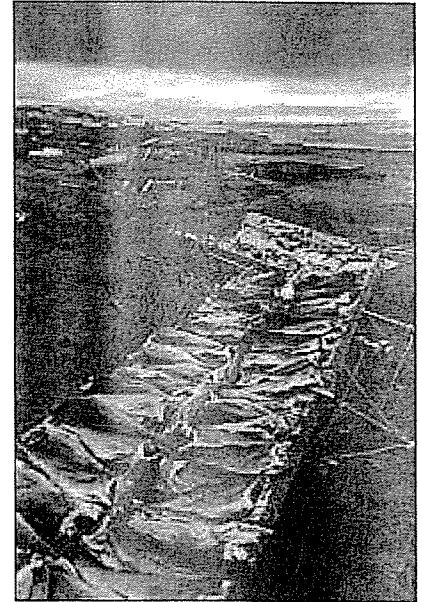
Fishermen benefited from the cod's tendency to congregate in great numbers. When spawning, cod gather in dense clumps of hundreds of millions of fish. Northern and Grand Banks fish spawned on respective portions of the offshore banks, sowing the ocean currents with trillions of eggs. This made it possible for men to catch them in vast numbers with handlines and, in recent decades, to scoop up entire stocks with enormous nets hauled by trawlers the size of a small ocean liner. For many centuries, though, it was the cod's next move that put food on the table. After spawning, the vast schools would spread into sheets and head inshore, beating the ocean for prey. They would eventually find it: even vaster schools of capelin. For reasons still unknown, some of these capelin schools spawn on the offshore banks like the cod, which gorge on them shortly after their orgies are completed.

Cod are greedy, however, and will eat almost anything they can fit into their gaping mouths. In nature this made them versatile, willing to eat whatever is available: whole mussels, crabs, lobsters, squid, even juvenile cod. It also made baiting them very easy: They can reportedly be landed with an unadorned lump of lead, pieces of hot dog, even Styrofoam cups. Once hooked they put up no fight at all; they just hang there as they're pulled into the boat.

### Strip Mining the Seas

In 1951, a strange ship flying the British flag arrived on the Grand Banks. It was enormous: 280 feet long and 2,600 gross tons, four times the size of a large side trawler. Its superstructure, tall funnels and numerous portholes, suggested an ocean-going passenger liner, but its aft deck confirmed it to be a fishing vessel. Gantry masts supported cables, winches, and gear the scale of which nobody had seen before. Its stern was marred by a gigantic chute, a ramp from sea to deck such as whaling ships use to drag aboard the 190-ton carcasses of blue whales. But the ramp was meant not for whales but for equally large nets filled with cod and whatever else happened to be in the water.

The Fairtry's arrival marked the beginning of the end for the Atlantic cod fishery, indeed for many of the world's fisheries. She was the world's first factory-freezer trawler, a multi-million-dollar vessel equipped with all the technological breakthroughs of the war. Below deck was an on-board processing plant with automated filleting machines, a fish meal rendering factory and an enormous bank of freezers. She could fish around the clock, seven days a week, for weeks on end, hauling up nets during fierce winter gales that could easily swallow the Statue of Liberty. With radar, sonar, fish-finders and echograms she could pinpoint and capture whole schools of fish with chilling effectiveness.



Cod dry on racks in southern Labrador. Even subsistence-level cod fishing is affected by the collapse.

© Wolfgang Kaehler

The ships grew bigger. They eventually reached 8,000 tons, towing nets with openings 3,500-feet in circumference. In an hour they can haul up as much as 200 tons of fish, twice as much as a typical 16th century ship would have caught in an entire season. Re-crewed and supplied by ocean-going tenders, the ships could pursue fish anywhere in the world for months on end without ever visiting a port or even sighting land. Plying international waters, they were outside the jurisdiction of the nations off which they fished. By the 1970s the Soviet Union had 400 factory trawlers on the high seas. Japan had 125, Spain, 75, West Germany, 50, France and Britain, 40, and dozens more were operated by East Bloc nations. They plied the Georges Banks of New England, the hake stocks of South Africa, Alaskan and Bering Sea Pollock, Antarctic krill and, most of all, the northern cod off Newfoundland and Labrador. They were strip-mining the sea.

### End Game

In 1968, the cod catch peaked at 810,000 tons, almost three times more than had been caught in any year prior to the Fairtry's arrival. Then, despite increased effort, larger nets, more accurate fish finders and larger on-board processing plants, total cod landings fell.

Two Canadian fisheries scientists, Jeffrey Hutchings and Ransom Myers, have calculated that about eight million tons of northern cod were caught between Cabot's arrival in 1647 and 1750, a period encompassing 25 to 40 cod generations. The factory trawlers matched that take in only 15 years--well within a single cod lifetime. The trawlers were scooping up fish many times faster than the ecosystem could replenish them. Not just cod but other groundfish, including flounder, halibut and haddock, were decimated.

In 1977 Canada followed Iceland in unilaterally extending its territorial waters from 12 to 200 miles offshore.

Foreign factory trawlers were kicked off the Banks except for a small portion called "the Tail" that lies beyond 200 miles. But by this time the groundfish stocks were so depleted that many factory trawlers had already moved on to strip-mine elsewhere.

Still, the decision was greeted with euphoria in Atlantic Canada. Finally the Banks would be used for the benefit of Canadians. But in a remarkable display of shortsightedness, Canada proceeded to build a deep-sea trawler fleet of its own. Foreign fishing had shattered the ecology of the Northwest Atlantic fisheries. The Canadian government proceeded to finish off the survivors.

The expansion of the domestic industry created an economic imperative that more fish be caught. "Under-utilized" fish stocks had to be captured to keep processing plants busy. So while the new fleet was under construction, joint ventures were set up with foreign factory trawlers to capture fish on the banks; the trawlers would land part of their catch at Newfoundland fish plants and keep the rest to land at home. The collapse of the Banks was right around the corner.

### **Then They Were Gone**

Donald Paul is a self-employed inshore fisherman who's been working the waters off Burin since 1974. He owns his own small boat and works the near-coastal waters around Placentia Bay, landing fish ashore at the end of the day. He's lucky to still be fishing.

"Back when I started there were plenty of fish," Paul says. "I'd say the first year I noticed something was 1978," Paul says. "In normal years we'd get 200,000 pounds of cod, but that year it was more like 70,000 pounds. Then all of a sudden they just crashed."

The shock came in 1988. New modeling techniques and the latest stock survey revealed that many groundfish stocks were on the edge of collapse. The northern cod stock--by far the largest and most important--was in the worst shape of all. Fisheries scientists concluded that quotas had to be more than halved in order to prevent this stock's collapse. Politicians were appalled; the proposed quotas would have caused economic chaos throughout Eastern Canada. So the politicians compromised what could not be compromised. Quotas were cut by only 10 percent.

More frightening data poured in confirming the stock was in serious trouble, that fishermen had been capturing as much as 60 percent of the adult cod every year for several years running. Plants closed and 2,000 people were out of work. Canada released \$584 million in emergency assistance. Fishermen tried as hard as they could, but could only catch 122,000 of the 190,000-ton cod quota for 1991. The stock was in free fall.

When the 1992 fish surveys were released, politicians finally realized that regardless of what quotas they set, nature had spoken: there would be no fish to feed the plants and working families of Atlantic Canada. The estimated combined weight of the adult cod population was a mere 1.1 percent of its historic levels of the early 1960s. In 1992 the government finally closed the Banks altogether to allow the stock to recover. But by then it was far too late.

### **Too Little, Too Late**

Even if left alone, the northern cod may never recover. Industrial technology and human greed may have so decimated these hardy fish that they can no longer hold onto their ecological niche. The crash could be irreversible.

"They might never come back, at least not in their former abundance," says Richard Haedrich, a fisheries scientist at Memorial University. "Once you start changing the whole ecosystem, the community structures and sizes, you've got a whole new ball game."

There is growing evidence that the trawlers may not only have scooped up all the fish but also laid to waste the entire seafloor environment those fish required to survive. In the late 1990s marine scientists began assembling evidence that modern fishing gear causes massive physical and ecological disturbances. The continental shelf--where most ecological and, thus, fishing activity takes place--is not a featureless plain of mud. Rocky outcroppings, boulders, cobbles and pebbles provide "structure" on and around which living communities can thrive. Here, juvenile cod and other fish can hide from predators and find small crustaceans, crabs and other creatures to eat.

Modern bottom trawls destroy these structures like gigantic plows. Dragging the bottom for cod or flounder, nets are spread open by a pair of metal "doors" or "boards" weighing tens to thousands of pounds. The bottom of the trawl mouth is a thick cable bearing the weight of 50- to 700-pound steel weights that keep the trawl on the seabed. Many drag tickler chains to scare shrimp or fish off the bottom and into the net. Scallop, oyster and crab dredges consist of steel frames and chain-mesh bags that plow through the seabed to sift out target species. With each pass, trawls and dredges overturn, scrape or sweep away boulders and cobbles, crush or ensnare bottom plants and structure-building animals, and kill or disrupt worms and other animals in the sediment. Most species take months or years to reestablish themselves, some take decades or centuries. None are given that much time.

In a 1998 paper, Les Watling of the University of Maine and Elliot Norse of the Marine Conservation Biology Institute likened trawling's effect on the seabed to that of forest clear-cutting, except that it occurs over an area of the Earth's surface that is 150 times greater. The factory trawlers may have destroyed so much juvenile cod habitat that the Banks are no longer capable of nursing large numbers of the fish. Recovery would require decades without trawling.

These disruptions have allowed opportunistic creatures to move in. In some areas small skates and dogfish (a small shark species) appear to have taken over the cod's niche in the ecosystem. Scavengers like the snow crab and American lobster underwent incredible population explosions as the cod stocks collapsed. Large cod once ate these crustaceans, but now there aren't any cod large enough. There's some evidence that the current crab and lobster fishing booms were also fueled by huge quantities of dead animals falling to the seafloor after being dumped as by-catch from trawlers.

It's not certain that Canada has learned from its mistakes with the cod. The fishery has simply turned to alternative species further down the food chain and, in at least some instances, may be pushing their populations towards collapse. After several years of intensive fishing, total landings of "under-utilized" fish like herring, eel and skates dropped significantly in both Newfoundland and Atlantic Canada as a whole. Thousands of tons of lumpfish are harvested for their roe and urchins for their gonads--both products prized on the Asian market.

Meanwhile the keystone species of the entire ecosystem--the humble capelin--has again become the target of a sizeable fishery. Throughout the last decade, Newfoundland fishermen were unable to catch enough of the tiny fish to fill their quotas. Canada's Department of Fisheries and Oceans maintain that the stocks are healthy; rural residents across the province think the government's models will once again be proven wrong.

\* \* \*

Jack May, the keeper of Twillingate Lighthouse, a few miles west of Newfoundland's Fogo Island, and a poet who regularly reads his historical work on the Canadian Broadcasting Company's provincial morning show, isn't optimistic about the cod returning. "We don't seem to be able to see the big picture," he says. "We see a few extra shrimp in the system and we go like hell after them and grab them all up and say, 'Hey, we made a lot of money on that! Here's a fishery worth billions!' But it's only going to stay that way if we look at it 10 years down the road and see what Mother Nature's ground rules are for what we can take. We don't set the rules, we can only try to work within them."

Did you enjoy this article? **[Subscribe to E/The Environmental Magazine!](#)**

## CONTACTS

Marine Conservation Biology Institute  
Phone: (202) 483-9570  
Alternate URL: <http://www.seaweb.org>

[Click Here to Print](#)

## **A Run on the Banks. How "Factory Fishing" Decimated Newfoundland Cod - Article Questions**

1. Compare the state of fishing in Newfoundland 500 years ago to today.
2. What are some of the benefits of cod as a food source?
3. What is a "groundfish" species? List several groundfish species.
4. Describe at least 2 specific reasons why cod are so easily caught.
5. Describe several of the technological advances that the "Fairtry" and other trawler ships possessed from the 1950s and later which helped them to catch fish so effectively, essentially leading to a "strip-mining of the seas".
6. From "Too Little Too Late", describe the process of Trawling. Describe the effects that trawling has on the ocean ecosystem.
7. Why might it be too late to do anything that would help to restore the cod fishery? Why might this decimation be irreversible?